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CME Credits

PRACTICAL URORADIOLOGY

Intraperitoneal Rupture of the Bladder

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Computed tomographic cystography is an accurate method for diagnosis of bladder rupture. Sagittal and coronal reformation may be helpful in identifying most sites of bladder rupture. Intraperitoneal bladder rupture must undergo formal repair and suprapubic tube drainage.

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There are 3 CME questions based on this article

1. Introduction

Intraperitoneal bladder rupture is one type of bladder rupture, and accounts for approximately one-third of bladder injuries. Hematuria is the most common clinical symptom. Computed tomographic (CT) cystography is accurate for diagnosis of bladder rupture. Sagittal and coronal multiplanar reformations may be helpful in identifying most sites of bladder rupture. Intraperitoneal bladder rupture must undergo formal repair and suprapubic tube drainage.

2. Case Report

A 50-year-old man fell on the ground after heavy drinking, and was brought to the emergency department of our hospital. In the emergency room, his consciousness was clear and oriented, and his vital signs were stable. Ecchymosis over the right eye region was found. He complained of dysuria and red urine. Hematuria was found, and urinalysis showed many red blood cells. Physical examination revealed a soft abdomen, with no pain, tenderness, or rebounding pain. Computed tomography of the abdomen was performed, which showed intraperitoneal rupture of the urinary bladder (Figure 1). An emergency operation was performed, and a 4-cm whole-layer rupture over the posterior wall of the urinary bladder near the dome was found. The rupture of the urinary bladder was repaired. Two drainage catheters were placed in the pelvic cavity, and a Foley catheter was placed into the lumen of the urinary bladder. The postoperative course was smooth. The two drainage catheters and the Foley catheter were removed. The patient was discharged in a stable condition. Outpatient department follow-up was recommended. Follow-up cystography was done in the outpatient department, which showed normal findings.

3. Discussion

Rupture of the bladder from external trauma is usually due to a blow to the abdomen when the bladder is distended, or is associated with fracture of the pelvis. The most common cause of bladder rupture is blunt abdominal trauma, mostly from motor vehicle accidents, but falls, crushing injuries, and blows to the abdomen also occur.[1–3] Hematuria is the most common clinical symptom in patients with bladder rupture. Tenderness over the pelvic cavity or abdomen may be present with intraperitoneal bladder rupture.

Bladder ruptures are classified radiologically as follows: type I, bladder contusion; type II, intraperitoneal rupture (Figure 1); type III, interstitial bladder injury; type IV, extraperitoneal rupture that is divided into IVa (simple extraperitoneal rupture) and IVb (complex extraperitoneal rupture); and type V, combined bladder injury.[4]

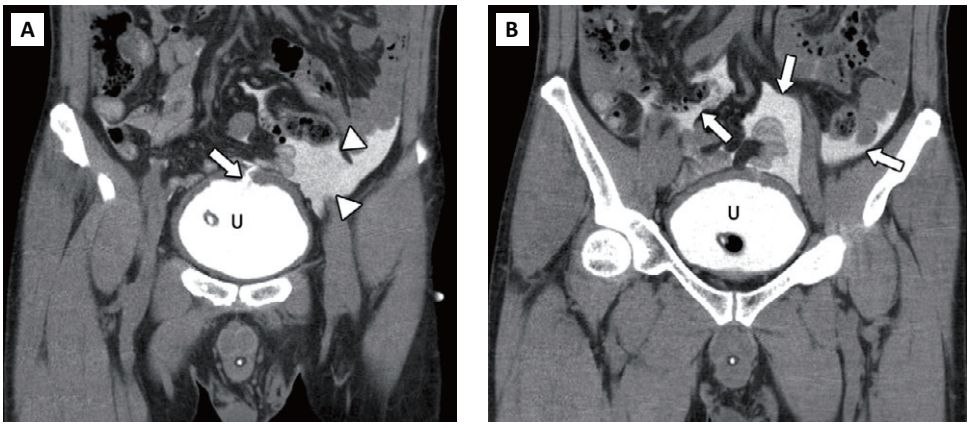

Figure 1 A 50-year-old man with an intraperitoneal bladder rupture after a fall. (A) Coronal computed tomographic cystography showing rupture at the dome of the bladder (arrow) and contrast extravasation into the peritoneal space (arrowheads). (B) Coronal computed tomographic cystography showing contrast extravasation between the loops of the small intestine (arrows). U = bladder.

Diagnosis of bladder rupture increasingly relies on CT cystography, and can also allow simultaneous assessment of multiple abdominal organs.[5,6] Sagittal and coronal multiplanar reformations in CT cystography may be helpful in identifying most sites of bladder rupture (Figure 1).[6] The results of CT cystography in a bladder contusion are normal. Intraperitoneal bladder rupture accounts for approximately one-third of bladder injuries, and contrast material extravasation into the paracolic gutters and outlining loops of the small bowel are found by CT cystography (Figure 1). Interstitial bladder injury only shows a defect in the bladder wall in the presence of intramural hematoma. Extraperitoneal bladder rupture accounts for approximately 60% of all bladder injuries. Simple extraperitoneal bladder rupture only shows contrast material extravasation that is limited to the pelvic extraperitoneal space on CT cystography; however, contrast material extravasation may extend into the anterior abdominal wall, penis, scrotum, or perineum in complex extraperitoneal bladder rupture. Combined bladder injury accounts for approximately 5% of bladder injuries, and CT cystography shows the findings of both intraperitoneal and extraperitoneal bladder rupture. Bladder contusions require no therapy, but large-bore Foley catheter drainage is needed if significant hemorrhage is present. Intraperitoneal bladder ruptures must undergo formal repair, and suprapubic tube drainage may be needed. A Foley catheter is needed in interstitial bladder injuries. Extraperitoneal bladder ruptures may be treated with catheter drainage if the urine clears and the bladder neck is not involved in the injury; otherwise, formal repair is mandatory. Combined bladder injury should undergo formal repair and suprapubic tube drainage.

References

1. Carroll PR, McAninch JW. Major bladder trauma: mechanisms of injury and a unified method of diagnosis and repair. *J Urol* 1984;132:254–7.
2. Corriere JN Jr. Trauma to the lower urinary tract. In: Gillenwater JY, et al., eds. *Adult and Pediatric Urology*, 3rd edition. St. Louis: Mosby, 1996:563–86.
3. Corriere JN Jr, Sandler CM. Management of the ruptured bladder: 7 years of experience with 111 cases. *J Trauma* 1986;26:830–3.
4. Sandler CM, Hall JT, Rodriguez MB, Corriere JN Jr. Bladder injury in blunt pelvic trauma. *Radiology* 1986;158:633–8.
5. Vaccaro JP, Brody JM. CT cystography in the evaluation of major bladder trauma. *Radiographics* 2000;20:1371–81.
6. Chan DPN, Abujudeh HH, Cushing GL, Novelline RA. CT cystography with multiplanar reformation for suspected bladder rupture: experience in 234 cases. *Am J Roentgenol* 2006;187:1296–302.